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## TOMOGRAM CREATING DEVICE, TOMOGRAM CREATING METHOD, AND RADIATION EXAMINING APPARATUS

### Background of the Invention

The present invention relates to a tomogram creating device, a tomogram creating method and a radiation examining apparatus, and particularly to a tomogram creating device, a tomogram creating method and a radiation examining apparatus suitable for application to the creation of tomograms by positron emission CT (Position Emission Computed Tomography (hereinafter called "PET")) or the creation of tomograms by X-ray CT and single photon emission CT (Single Photon Emission Computed Tomography (hereinafter called "SPECT")).

As a technology for non-invasively imaging functions, forms in a body of an object to be examined or an examinee, there is known an examination using radiation. As typical ones of radiation examining apparatuses, there are known X-ray CT, MRI, PET, SPECT, etc.

The X-ray CT is a method of irradiating an object to be examined or an examinee with radiation emitted from an X-ray source and imaging the form of the body from transmission of the radiation in the body of the examinee. By detecting the intensity of X rays transmitted through the body by a radiation detecting element, a linear attenuation coefficient between the X-ray source and the radiation detecting element is obtained. The linear attenuation coefficient of each voxel is determined by a Filtered Back Projection Method or the like described in IEEE Transaction on Nuclear Science Vol. NS-21, pp 228 - 229. The determined value is converted into a CT value. A radiation source well used in the X-ray CT is about 80keV or so.

The PET examination is a method of administering a radioactive medical agent (hereinafter called "PET medical agent") containing positron emission nuclear species ( $^{15}\text{O}$ ,

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## SUBSTITUTE SPECIFICATION

### TOMOGRAM CREATING DEVICE, TOMOGRAM CREATING METHOD, AND RADIATION EXAMINING APPARATUS

#### Background of the Invention

[0001] The present invention relates to a tomogram creating device, a tomogram creating method and a radiation examining apparatus, and particularly to a tomogram creating device, a tomogram creating method and a radiation examining apparatus suitable for application to the creation of tomograms by positron emission CT (Position Emission Computed Tomography (hereinafter called "PET")) or the creation of tomograms by X-ray CT and single photon emission CT (Single Photon Emission Computed Tomography (hereinafter called "SPECT")).

[0002] As a technology for non-invasively imaging functions, forms in a body of an object to be examined or an examinee, there is known an examination using radiation. As typical ones of radiation examining apparatuses, there are known X-ray CT, MRI, PET, SPECT, etc.

[0003] The X-ray CT is a method of irradiating an object to be examined or an examinee with radiation emitted from an X-ray source and imaging the form of the body from transmission of the radiation in the body of the examinee. By detecting the intensity of X rays transmitted through the body by a radiation detecting element, a linear attenuation coefficient between the X-ray source and the radiation detecting element is obtained. The linear attenuation coefficient of each voxel is determined by a Filtered Back Projection Method or the like described in IEEE Transaction on Nuclear Science Vol. NS-21, pp 228 - 229. The determined value is converted into a CT value. A radiation source well used in the X-ray CT is about 80keV or so.

[0004] The PET examination is a method of administering a radioactive medical agent (hereinafter called "PET medical agent") containing positron emission nuclear species ( $^{15}\text{O}$ ,  $^{13}\text{N}$ ,  $^{11}\text{C}$ ,  $^{18}\text{F}$ , etc.), and a substance (marker substance) having the

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